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मानक

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Mazdoor Kisan Shakti Sangathan

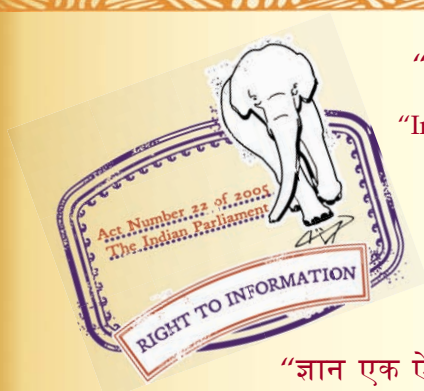
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

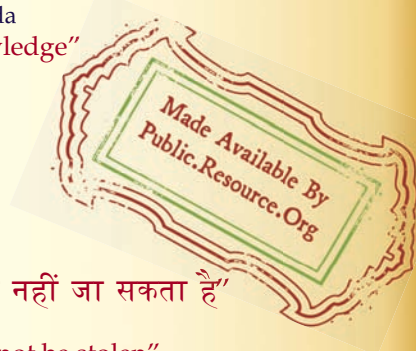
IS 7692 (1993): Specification for headforms for testing of helmets [CED 22: Fire Fighting]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

हैल्मेट के परीक्षण के लिए सिर के फर्मों की विशिष्टि
(पहला पुनरीक्षण)

Indian Standard

HEADFORMS FOR TESTING OF
HELMETS—SPECIFICATION

(First Revision)

UDC 0·86·5 : 614·891·1 : 620·1

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BUREAU OF INDIAN STANDARDS
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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Fire Fighting Sectional Committee had been approved by the Civil Engineering Division Council.

For testing helmets, it is important to specify precisely a range of headforms to ensure a close fit for the helmet under test, thereby avoiding inaccuracies to the measurement of transmitted forces to the measurement of transmitted force. This standard has, therefore, been formulated to give dimensions and other details of the headforms used for testing of helmets.

This standard was first published in 1965 covering five sizes to be used for testing purposes. In this revision all sizes of headforms as given in international standards have been covered out of which only four are to be used for testing purposes, the other sizes are for reference only.

In formulation of this revision assistance has been derived from the following publications:

ISO/DIS 6220 Headforms for use in the testing of protective helmets. International Organization for Standardization.

ECE Regulation No. 22 — Uniform provisions concerning the approval of protective helmets for drivers and passengers of motor cycles and mopeds.

In the formulation of this standard, due weightage has been given to international coordination among the standards and practices prevailing in different countries in addition to relating it to the practices followed in this country.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the results of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

HEADFORMS FOR TESTING OF HELMETS — SPECIFICATION

(First Revision)

1 SCOPE

This standard specifies the size and constructional details of headforms for use in testing of protective helmets (all kinds). Details of headform below the reference plane are included as an optional requirement for testing Industrial Safety Helmets, Firemen's helmets, and Civil Defence helmets, but for testing of motorcycle riders' helmets, the headform shall conform to the details as per this standard up to line *HH'* in Fig.1 or up to the depth of the helmet under test.

2 GENERAL

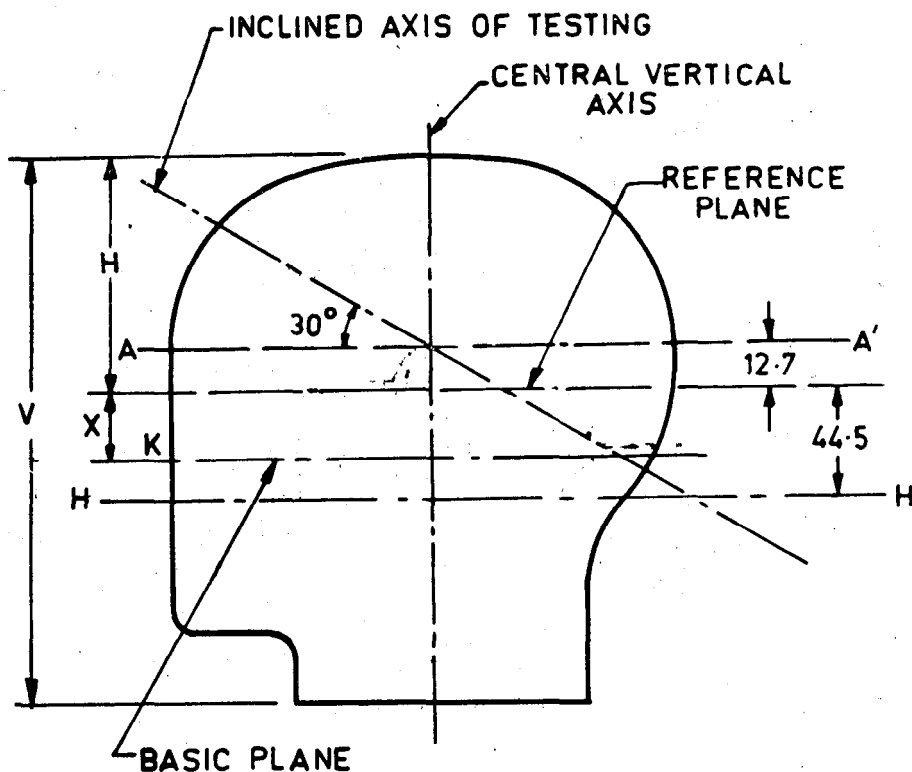
2.1 Fig. 1 and Table 1 indicate the basic reference data and mounting locations for the headforms.

2.2 Fig. 2 and Table 2 give the dimensional details of the headforms above the reference line.

2.3 Fig. 3 and Table 3 give the dimensional details below the reference line.

2.4 Size Codes

The size code used for headforms relate to the inside circumference of helmets. The other dimensions are listed in Table 1. The circumference values refer to the internal circumference of the helmet measured at the headband level (Plane *AA'* in Fig. 1). In case of intermediate values of circumference the next lower headform shall be used.



All dimensions in millimetres.

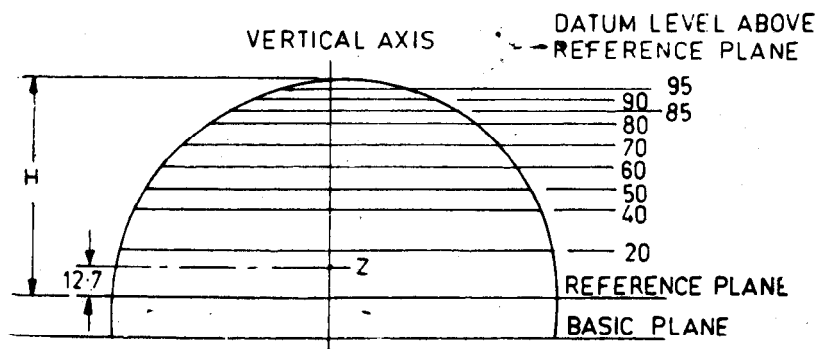
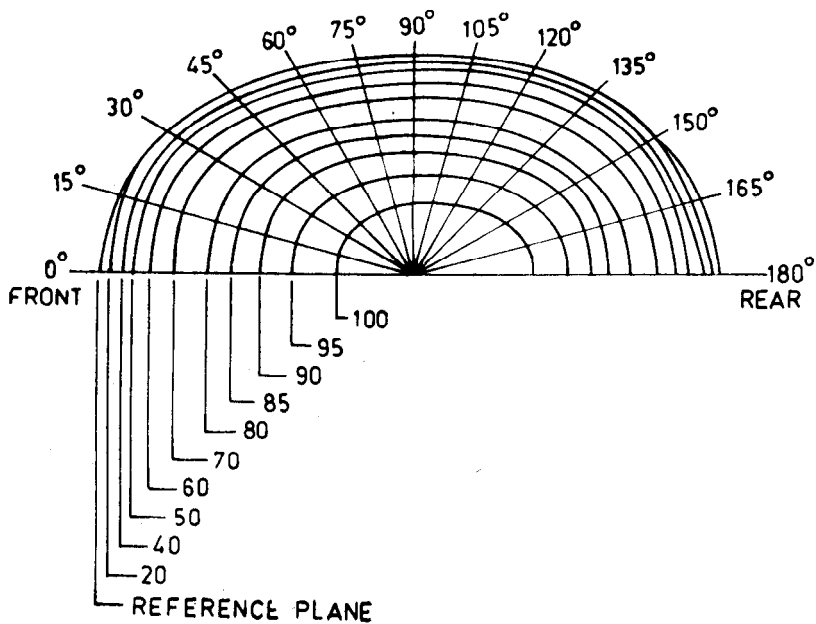
FIG. 1 MINIMUM EXTENT OF PROTECTION

Table 1 Dimensions of Headforms
(Clauses 2.1, 2.4 and 2.5)
All dimensions in millimetres.

| Code Letter of the Headform | H | V | Circumference of the Inside of the Head Fittings |
|-----------------------------|-------|-------|--|
| 0 | 89.5 | 216.4 | 500 |
| 1 | 96.0 | 223.4 | 540 |
| 2 | 102.5 | 232.4 | 570 |
| 3 | 107.0 | 249.0 | 600 |

NOTES

- 1 In case of intermediate value, headform applicable to next lower value shall be used.
2 Tolerance on all dimensions other than the inside circumference of the helmet : 0.25 mm.



b) Head Form Data Above Basic Plane

All dimensions in millimetres.

FIG. 2 HEADFORM DATA (ABOVE BASIC PLANE)

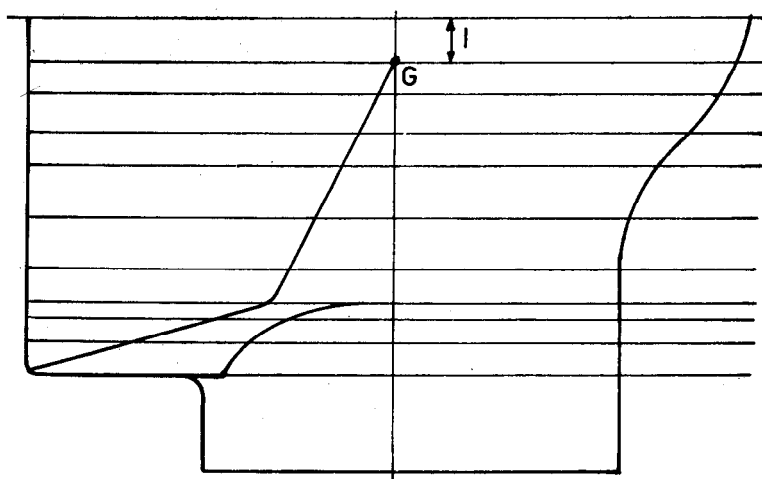
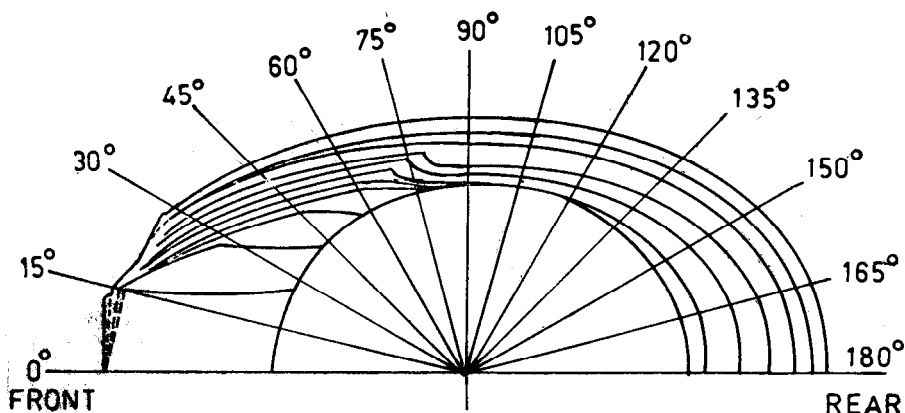


FIG. 3 HEADFORM BASIC DATA BELOW REFERENCE LINE

2.5 The headform shall be marked with the reference line and the circumference on each side of the headform. The lower part of the headform is designed to enable mounting either in vertical or inclined position during the Shock Absorption Test. Headform shall also carry code letters as given in Table 1.

2.6 The headform shall also be marked with:

- the basic plane as illustrated in Fig. 1,
- the longitudinal and transverse planes through the vertical axis,
- two points equispaced each side of point K on the basic plane to enable the horizontal requirements for peripheral vision to be checked, and
- two points equispaced 33 mm each side of point K on the basic plane.

3 CONSTRUCTION

3.1 The headform is built up from layers of hardwood having a density of 640 to 720 kg/m³ at a moisture content of 12 percent. Above the reference plane, the layers are planed to thicknesses to match the datum levels and are cut to outlines plotted from the dimensions given in Table 2 and Table 3; the grain being displaced by 90° from layer to layer.

The layers are glued and screwed together. Accurate assembly is facilitated by marking transverse and longitudinal axes on each piece and by drilling a small diameter hole through its centre. The assembled headform is held in a press until the glue has hardened, when the final shaping may be undertaken. The headform should be sealed with several coats of varnish.

The constructional details above are only suggestive, alternate materials and construction methods are permissible provided the shapes are based on the polar data provided as per Table 2 and Table 3.

Table 2 Polar Coordinates of Horizontal Half Sections
(Clauses 2.2 and 3.1)

All dimensions in millimetres.

| 2-A | | | | | | | | | | | | | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 88.0 | 86.5 | 83.0 | 75.5 | 70.0 | 67.0 | 66.5 | 69.5 | 73.5 | 78.5 | 84.0 | 87.0 | 88.0 |
| 20 | 85.5 | 84.5 | 82.5 | 75.5 | 70.0 | 67.0 | 66.5 | 69.5 | 73.5 | 78.5 | 84.0 | 87.0 | 87.0 |
| 40 | 80.0 | 79.5 | 79.0 | 72.0 | 67.5 | 65.0 | 64.5 | 67.0 | 71.0 | 76.0 | 80.5 | 82.0 | 81.5 |
| 50 | 75.0 | 75.0 | 74.5 | 68.5 | 63.5 | 61.0 | 60.5 | 63.5 | 67.0 | 72.0 | 76.0 | 77.0 | 77.0 |
| 60 | 68.0 | 68.0 | 67.5 | 62.5 | 57.5 | 55.5 | 55.0 | 58.0 | 61.5 | 66.0 | 70.0 | 70.0 | 70.5 |
| 70 | 56.0 | 56.0 | 56.5 | 53.0 | 49.5 | 47.0 | 47.0 | 49.0 | 53.0 | 57.0 | 61.5 | 61.0 | 61.0 |
| 80 | 37.0 | 37.5 | 37.0 | 36.5 | 35.5 | 34.0 | 34.0 | 36.0 | 39.5 | 44.5 | 49.0 | 49.0 | 48.5 |
| 85 | 23.0 | 24.0 | 23.0 | 22.0 | 22.0 | 23.0 | 24.0 | 24.5 | 29.5 | 33.5 | 36.0 | 36.5 | 37.0 |

Dimension H : 89.7 mm
Measurement around the head : 500 mm

| 2-B | | | | | | | | | | | | | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 89.5 | 88.0 | 84.5 | 76.5 | 74.5 | 68.5 | 68.0 | 71.0 | 75.0 | 80.5 | 86.0 | 89.0 | 89.5 |
| 20 | 87.0 | 86.5 | 83.5 | 76.5 | 71.5 | 68.5 | 68.0 | 71.0 | 75.0 | 80.5 | 86.0 | 88.0 | 89.0 |
| 40 | 81.5 | 81.5 | 80.0 | 74.0 | 69.0 | 66.0 | 65.5 | 66.0 | 72.0 | 77.0 | 77.5 | 83.0 | 83.5 |
| 50 | 77.0 | 77.0 | 76.0 | 70.0 | 65.5 | 63.0 | 62.5 | 65.0 | 68.5 | 73.5 | 77.5 | 78.5 | 78.5 |
| 60 | 69.5 | 70.0 | 70.0 | 64.0 | 59.0 | 57.0 | 57.5 | 59.5 | 62.5 | 67.5 | 72.0 | 72.0 | 72.0 |
| 70 | 59.5 | 58.5 | 59.0 | 54.0 | 50.0 | 48.0 | 48.0 | 50.5 | 54.0 | 59.0 | 63.5 | 64.0 | 63.5 |
| 80 | 41.5 | 42.0 | 42.0 | 39.0 | 37.5 | 37.0 | 37.0 | 39.0 | 42.0 | 47.0 | 51.5 | 51.5 | 51.0 |
| 85 | 28.0 | 28.5 | 29.0 | 28.0 | 26.5 | 27.0 | 27.5 | 29.0 | 32.5 | 37.0 | 41.5 | 41.0 | 41.5 |
| 90 | 7.0 | 6.5 | 7.0 | 7.5 | 8.0 | 9.5 | 11.5 | 13.5 | 17.0 | 19.5 | 23.0 | 22.5 | 21.0 |

Dimension H : 91.2 mm
Measurement around the head : 510 mm

| 2-C | | | | | | | | | | | | | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 91.5 | 89.5 | 86.0 | 79.0 | 72.5 | 70.0 | 69.5 | 72.5 | 77.0 | 82.0 | 87.5 | 90.5 | 91.5 |
| 20 | 90.0 | 88.0 | 85.5 | 79.0 | 72.5 | 70.0 | 69.5 | 72.5 | 77.0 | 82.0 | 87.0 | 90.0 | 90.5 |
| 40 | 84.5 | 83.0 | 82.0 | 76.0 | 70.0 | 68.0 | 68.0 | 70.5 | 74.5 | 79.5 | 83.5 | 85.5 | 86.5 |
| 50 | 79.5 | 78.5 | 77.5 | 72.5 | 67.0 | 64.5 | 64.5 | 67.0 | 71.0 | 76.0 | 79.5 | 81.0 | 81.5 |
| 60 | 72.5 | 72.0 | 71.0 | 67.0 | 62.0 | 59.5 | 59.5 | 62.0 | 66.0 | 71.0 | 74.0 | 75.0 | 75.0 |
| 70 | 62.0 | 62.0 | 61.5 | 58.0 | 54.0 | 52.0 | 52.0 | 54.5 | 58.5 | 63.0 | 66.0 | 66.5 | 66.5 |
| 80 | 46.0 | 46.0 | 45.5 | 43.5 | 42.0 | 40.5 | 41.0 | 43.0 | 46.5 | 51.0 | 54.5 | 55.0 | 55.0 |
| 85 | 35.5 | 35.5 | 35.0 | 33.5 | 32.5 | 32.0 | 32.5 | 34.5 | 38.0 | 42.0 | 44.5 | 45.5 | 45.5 |
| 90 | 20.0 | 20.0 | 19.5 | 19.0 | 18.5 | 18.5 | 19.5 | 21.0 | 24.0 | 28.0 | 30.0 | 30.5 | 30.5 |

Dimension H : 93 mm
Measurement around the head : 520 mm

Table 2 (continued)

| 2-D | | | | | | | | | | | | | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 93.0 | 91.0 | 88.0 | 81.0 | 74.5 | 71.5 | 71.0 | 74.0 | 78.0 | 84.0 | 89.5 | 92.0 | 93.0 |
| 20 | 91.0 | 89.5 | 87.0 | 81.0 | 74.5 | 71.5 | 71.0 | 74.0 | 78.0 | 84.0 | 89.5 | 92.0 | 92.5 |
| 40 | 85.0 | 85.0 | 83.5 | 77.5 | 72.0 | 68.5 | 69.0 | 71.0 | 75.0 | 80.5 | 86.0 | 87.0 | 87.5 |
| 50 | 81.0 | 80.5 | 80.0 | 74.0 | 69.0 | 66.0 | 66.0 | 69.0 | 72.0 | 77.5 | 82.5 | 83.0 | 83.5 |
| 60 | 75.0 | 75.0 | 74.0 | 68.0 | 63.5 | 61.0 | 61.0 | 63.5 | 67.5 | 72.0 | 76.0 | 77.0 | 77.5 |
| 70 | 64.5 | 64.5 | 64.0 | 60.0 | 55.5 | 53.0 | 53.5 | 56.0 | 60.0 | 64.5 | 68.0 | 68.5 | 69.0 |
| 80 | 48.5 | 48.5 | 48.5 | 47.0 | 44.5 | 43.0 | 43.0 | 45.0 | 48.5 | 53.5 | 57.5 | 58.0 | 58.0 |
| 85 | 39.0 | 39.0 | 39.0 | 37.0 | 37.0 | 36.0 | 36.0 | 38.0 | 41.0 | 45.5 | 48.5 | 49.0 | 49.0 |
| 90 | 23.0 | 23.0 | 23.0 | 24.0 | 24.5 | 25.0 | 25.0 | 27.0 | 30.0 | 33.0 | 37.0 | 37.0 | 37.0 |

Dimension H : 94.5 mm

Measurement around the head : 530 mm

| 2-E | | | | | | | | | | | | | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 94.5 | 93.0 | 90.0 | 82.0 | 76.5 | 73.5 | 73.0 | 76.0 | 80.0 | 85.0 | 91.0 | 94.0 | 94.5 |
| 20 | 92.5 | 91.5 | 89.0 | 82.0 | 76.5 | 73.5 | 73.0 | 76.0 | 80.0 | 85.0 | 90.5 | 93.5 | 94.0 |
| 40 | 87.0 | 87.5 | 85.0 | 79.5 | 74.5 | 71.0 | 71.5 | 74.0 | 77.5 | 82.5 | 88.0 | 89.0 | 89.0 |
| 50 | 82.5 | 83.0 | 81.0 | 76.0 | 71.0 | 68.0 | 68.0 | 70.5 | 74.0 | 79.5 | 83.5 | 84.5 | 84.5 |
| 60 | 76.5 | 76.5 | 75.5 | 71.0 | 66.5 | 63.5 | 63.5 | 66.0 | 69.5 | 74.0 | 78.5 | 79.0 | 79.0 |
| 70 | 66.5 | 66.5 | 66.5 | 63.0 | 59.0 | 56.5 | 56.5 | 58.5 | 62.0 | 66.5 | 70.5 | 71.0 | 71.0 |
| 80 | 52.0 | 52.0 | 52.0 | 50.0 | 47.5 | 46.0 | 46.5 | 48.0 | 51.0 | 56.0 | 59.5 | 60.0 | 60.0 |
| 85 | 41.5 | 41.5 | 41.5 | 40.5 | 39.5 | 39.0 | 39.5 | 41.0 | 44.0 | 48.0 | 51.5 | 52.0 | 52.0 |
| 90 | 28.0 | 28.0 | 28.5 | 28.5 | 28.5 | 29.0 | 30.0 | 31.0 | 34.0 | 37.5 | 41.5 | 42.0 | 42.0 |
| 95 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.5 | 11.0 | 12.0 | 13.5 | 15.0 | 16.0 | 16.0 | 16.0 |

Dimension H : 96 mm

Measurement around the head : 540 mm

| 2-F | | | | | | | | | | | | | |
|------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 96.0 | 94.5 | 91.0 | 83.5 | 78.0 | 74.5 | 74.5 | 77.0 | 81.0 | 86.5 | 92.0 | 95.0 | 96.0 |
| 20 | 93.5 | 93.0 | 90.5 | 83.5 | 78.0 | 74.5 | 74.5 | 77.0 | 81.0 | 86.5 | 92.0 | 94.5 | 95.0 |
| 40 | 89.0 | 89.0 | 87.5 | 81.5 | 76.0 | 72.5 | 72.5 | 75.0 | 79.0 | 83.5 | 89.0 | 89.5 | 90.5 |
| 50 | 85.0 | 85.0 | 84.0 | 78.0 | 72.5 | 70.0 | 70.0 | 72.0 | 75.0 | 80.0 | 85.0 | 85.5 | 89.0 |
| 60 | 78.5 | 78.5 | 78.0 | 72.5 | 67.5 | 65.5 | 65.5 | 67.5 | 70.5 | 75.0 | 79.0 | 80.0 | 80.5 |
| 70 | 69.0 | 68.5 | 68.5 | 64.5 | 60.0 | 59.0 | 58.0 | 60.0 | 64.0 | 67.5 | 72.0 | 72.5 | 73.5 |
| 80 | 54.0 | 54.5 | 54.5 | 52.5 | 50.5 | 48.5 | 48.0 | 50.0 | 53.0 | 57.5 | 62.5 | 62.0 | 62.0 |
| 85 | 44.0 | 44.5 | 44.0 | 44.0 | 43.0 | 41.5 | 41.5 | 43.5 | 46.5 | 51.0 | 55.5 | 55.0 | 55.0 |
| 90 | 31.5 | 31.0 | 31.0 | 31.5 | 32.0 | 33.5 | 34.0 | 35.5 | 38.5 | 43.0 | 46.0 | 46.5 | 47.0 |
| 95 | 17.5 | 16.5 | 17.0 | 17.5 | 18.5 | 20.5 | 21.0 | 24.5 | 27.0 | 30.0 | 33.0 | 33.0 | 33.0 |

Dimension H : 97.5 mm

Measurement around the head : 550 mm

Table 2 (continued)

| 2-G | | | | | | | | | | | | | |
|------------------------------|----------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 97.5 | 95.5 | 93.0 | 85.5 | 79.5 | 76.0 | 76.0 | 78.5 | 83.0 | 88.5 | 94.0 | 97.0 | 97.5 |
| 20 | 95.5 | 94.0 | 92.0 | 85.5 | 79.5 | 76.0 | 76.0 | 78.5 | 83.0 | 88.5 | 94.0 | 96.5 | 97.0 |
| 40 | 90.0 | 89.0 | 88.0 | 83.0 | 77.0 | 74.5 | 74.0 | 76.5 | 81.0 | 86.0 | 91.0 | 92.0 | 92.0 |
| 50 | 86.5 | 86.0 | 85.0 | 79.5 | 74.0 | 71.5 | 71.5 | 73.5 | 78.5 | 83.5 | 87.5 | 88.5 | 88.5 |
| 60 | 80.5 | 80.0 | 79.5 | 74.0 | 70.0 | 66.5 | 66.0 | 68.5 | 73.0 | 78.0 | 82.0 | 82.0 | 82.5 |
| 70 | 71.0 | 71.0 | 71.0 | 67.0 | 62.5 | 60.0 | 59.5 | 61.5 | 66.5 | 71.5 | 74.5 | 75.0 | 75.0 |
| 80 | 57.5 | 57.5 | 57.5 | 55.0 | 52.0 | 50.0 | 50.0 | 53.0 | 57.0 | 62.0 | 65.0 | 65.0 | 65.0 |
| 85 | 48.0 | 48.0 | 48.0 | 47.0 | 45.0 | 44.0 | 44.0 | 46.0 | 50.0 | 55.5 | 59.0 | 59.0 | 59.0 |
| 90 | 37.0 | 37.0 | 37.0 | 36.0 | 36.5 | 36.0 | 36.0 | 38.0 | 42.0 | 48.0 | 50.0 | 51.0 | 51.0 |
| 95 | 21.0 | 21.0 | 21.0 | 22.0 | 23.0 | 24.0 | 24.0 | 26.0 | 29.0 | 34.0 | 38.0 | 39.5 | 39.5 |

Dimension H : 99 mm

Measurement around the head : 560 mm

| 2-J | | | | | | | | | | | | | |
|------------------------------|----------|------|------|------|------|------|------|------|------|------|------|-------|-----------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 101.0 | 99.5 | 95.5 | 87.5 | 82.5 | 79.5 | 79.5 | 82.0 | 86.0 | 92.0 | 97.0 | 100.5 | 101.0 |
| 20 | 99.0 | 97.0 | 93.5 | 87.5 | 82.0 | 79.5 | 79.5 | 82.0 | 86.0 | 92.0 | 96.5 | 99.5 | 100.0 |
| 40 | 93.0 | 92.5 | 90.0 | 85.5 | 80.0 | 77.5 | 77.5 | 80.5 | 84.0 | 89.0 | 93.0 | 99.5 | 95.5 |
| 50 | 90.0 | 89.0 | 87.0 | 83.0 | 77.0 | 74.5 | 75.0 | 77.5 | 81.0 | 86.0 | 90.0 | 91.5 | 91.5 |
| 60 | 84.0 | 83.0 | 81.5 | 77.0 | 73.0 | 70.0 | 71.0 | 73.0 | 77.0 | 81.0 | 85.5 | 87.0 | 87.0 |
| 70 | 76.0 | 75.5 | 74.0 | 71.0 | 67.0 | 65.0 | 65.5 | 67.0 | 71.5 | 75.0 | 79.0 | 80.0 | 80.0 |
| 80 | 65.0 | 65.0 | 64.0 | 61.0 | 58.5 | 56.0 | 57.0 | 59.0 | 62.5 | 66.5 | 69.5 | 71.0 | 71.0 |
| 85 | 58.0 | 58.0 | 56.5 | 54.5 | 52.0 | 50.0 | 51.0 | 52.5 | 56.6 | 60.5 | 64.5 | 65.0 | 65.0 |
| 90 | 48.5 | 48.0 | 47.0 | 45.5 | 43.5 | 43.0 | 44.0 | 46.0 | 49.5 | 54.0 | 57.0 | 58.0 | 58.5 |
| 95 | 37.0 | 36.5 | 35.0 | 34.0 | 33.0 | 33.5 | 34.5 | 36.0 | 39.0 | 43.0 | 46.5 | 47.0 | 47.0 |
| 100 | 20.0 | 20.0 | 19.5 | 19.0 | 18.5 | 18.5 | 19.0 | 20.5 | 23.5 | 27.5 | 31.0 | 31.5 | 31.0 |

Dimension H : 102.5 mm

Measurement around the head : 570 mm

| 2-K | | | | | | | | | | | | | |
|------------------------------|----------|-------|------|------|------|------|------|------|------|------|------|-------|-----------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 102.5 | 101.0 | 97.0 | 90.0 | 84.0 | 81.5 | 81.0 | 83.5 | 88.0 | 93.0 | 98.5 | 101.5 | 102.5 |
| 20 | 100.5 | 99.0 | 97.0 | 90.0 | 84.0 | 81.5 | 81.0 | 83.5 | 88.0 | 93.0 | 98.5 | 101.0 | 102.0 |
| 40 | 95.0 | 95.5 | 93.0 | 87.0 | 82.0 | 79.0 | 79.0 | 81.5 | 85.0 | 90.0 | 95.0 | 97.0 | 97.5 |
| 50 | 91.5 | 91.0 | 90.0 | 84.5 | 79.0 | 76.5 | 76.5 | 79.0 | 83.0 | 88.0 | 92.5 | 93.0 | 93.5 |
| 60 | 86.0 | 86.0 | 86.0 | 79.5 | 74.5 | 72.0 | 72.5 | 75.0 | 78.5 | 83.0 | 86.5 | 88.0 | 88.5 |
| 70 | 77.5 | 77.5 | 77.5 | 73.0 | 68.5 | 66.0 | 66.0 | 68.5 | 72.0 | 77.0 | 80.0 | 81.5 | 81.5 |
| 80 | 67.0 | 67.0 | 67.0 | 65.5 | 60.5 | 58.0 | 57.5 | 59.5 | 63.0 | 68.0 | 72.0 | 72.5 | 72.5 |
| 85 | 59.5 | 59.5 | 59.5 | 58.0 | 55.0 | 53.0 | 52.0 | 54.0 | 57.0 | 62.5 | 66.0 | 66.5 | 66.5 |
| 90 | 50.0 | 50.0 | 50.0 | 50.0 | 47.0 | 45.5 | 45.5 | 47.5 | 50.5 | 50.5 | 60.0 | 60.0 | 60.0 |
| 95 | 39.0 | 39.0 | 39.0 | 39.0 | 38.0 | 36.5 | 37.5 | 39.0 | 43.0 | 48.0 | 52.0 | 52.5 | 52.5 |
| 100 | 25.0 | 25.0 | 25.0 | 25.5 | 26.0 | 26.0 | 25.0 | 26.5 | 30.0 | 35.0 | 39.0 | 41.0 | 41.0 |

Dimension H : 104 mm

Measurement around the head : 580 mm

Table 2 (continued)

| 2-L | | | | | | | | | | | | | |
|------------------------------------|-------------|-------|------|------|------|------|------|------|------|------|-------|-------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 104.0 | 103.0 | 99.5 | 91.5 | 86.0 | 83.0 | 82.5 | 85.0 | 89.0 | 94.5 | 100.5 | 103.5 | 104.0 |
| 20 | 101.5 | 101.0 | 99.0 | 91.5 | 86.0 | 83.0 | 82.5 | 85.0 | 89.0 | 94.5 | 100.5 | 103.5 | 103.0 |
| 40 | 96.5 | 97.0 | 95.0 | 89.0 | 83.5 | 80.0 | 80.0 | 83.0 | 87.5 | 92.0 | 97.0 | 99.0 | 99.0 |
| 50 | 93.0 | 93.5 | 91.5 | 86.0 | 81.5 | 77.0 | 77.0 | 79.5 | 84.5 | 89.0 | 93.5 | 95.0 | 94.5 |
| 60 | 87.0 | 88.0 | 86.5 | 81.0 | 76.0 | 73.5 | 73.5 | 75.5 | 80.0 | 84.5 | 88.5 | 90.5 | 90.5 |
| 70 | 80.0 | 80.5 | 79.5 | 75.0 | 70.0 | 68.0 | 67.0 | 69.5 | 74.0 | 78.5 | 82.5 | 91.0 | 83.5 |
| 80 | 70.0 | 70.5 | 70.0 | 66.0 | 61.5 | 59.5 | 60.0 | 62.0 | 65.0 | 70.0 | 74.0 | 75.5 | 75.0 |
| 85 | 63.0 | 63.5 | 62.5 | 60.0 | 57.0 | 55.0 | 55.5 | 57.0 | 60.0 | 65.0 | 68.5 | 69.5 | 68.0 |
| 90 | 55.0 | 55.0 | 54.5 | 51.5 | 49.0 | 47.5 | 48.5 | 50.5 | 53.5 | 58.0 | 62.5 | 63.0 | 63.0 |
| 95 | 44.0 | 44.0 | 44.0 | 42.5 | 40.5 | 39.5 | 40.0 | 42.0 | 45.0 | 49.5 | 53.5 | 55.0 | 55.0 |
| 100 | 30.0 | 29.5 | 29.5 | 29.0 | 27.5 | 28.0 | 29.0 | 30.5 | 33.5 | 38.0 | 42.0 | 42.5 | 42.5 |

Dimension H : 105.4 mm

Measurement around the head : 590 mm

| 2-M | | | | | | | | | | | | | |
|------------------------------------|-------------|-------|-------|------|------|------|------|------|------|------|-------|-------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 106.0 | 104.0 | 101.0 | 93.5 | 87.0 | 84.5 | 84.0 | 86.5 | 91.0 | 96.0 | 102.0 | 106.0 | 106.0 |
| 20 | 103.5 | 102.5 | 99.5 | 93.0 | 87.0 | 84.5 | 84.0 | 86.5 | 91.0 | 96.0 | 101.5 | 105.5 | 105.5 |
| 40 | 99.0 | 98.5 | 96.5 | 90.5 | 85.0 | 82.5 | 82.0 | 84.0 | 88.5 | 93.5 | 96.0 | 100.5 | 100.5 |
| 50 | 95.5 | 94.5 | 93.0 | 87.5 | 82.0 | 79.5 | 79.0 | 81.5 | 85.5 | 90.0 | 93.0 | 97.0 | 97.0 |
| 60 | 89.5 | 89.5 | 88.0 | 83.0 | 77.5 | 75.0 | 75.0 | 77.0 | 81.5 | 86.5 | 91.0 | 92.0 | 92.0 |
| 70 | 82.0 | 82.0 | 81.0 | 77.0 | 72.0 | 69.5 | 69.5 | 71.5 | 75.5 | 81.0 | 84.0 | 85.5 | 85.5 |
| 80 | 71.5 | 71.5 | 71.0 | 68.0 | 64.0 | 61.5 | 61.5 | 64.0 | 67.0 | 72.0 | 76.0 | 77.0 | 77.0 |
| 85 | 64.5 | 64.5 | 64.0 | 61.5 | 59.0 | 57.0 | 57.0 | 58.5 | 61.5 | 66.5 | 71.0 | 72.0 | 72.0 |
| 90 | 56.5 | 56.5 | 56.5 | 55.0 | 53.0 | 51.5 | 51.5 | 53.0 | 56.0 | 60.5 | 64.5 | 66.0 | 66.0 |
| 95 | 46.5 | 46.5 | 47.0 | 46.5 | 45.5 | 44.0 | 44.0 | 45.5 | 48.5 | 53.0 | 57.5 | 59.0 | 58.5 |
| 100 | 32.0 | 32.0 | 32.5 | 33.0 | 34.0 | 34.0 | 34.5 | 35.5 | 38.5 | 43.0 | 46.5 | 48.5 | 48.0 |
| 105 | 12.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.5 | 19.5 | 21.0 | 25.0 | 29.5 | 30.0 | 30.0 |

Dimension H : 107 mm

Measurement around the head : 600 mm

| 2-N | | | | | | | | | | | | | |
|------------------------------------|-------------|-------|-------|------|------|------|------|------|------|------|-------|-------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 107.0 | 105.5 | 102.5 | 95.0 | 89.0 | 86.0 | 85.5 | 88.0 | 92.0 | 98.0 | 103.0 | 106.0 | 107.0 |
| 20 | 104.5 | 103.5 | 102.0 | 95.0 | 89.0 | 86.0 | 85.5 | 88.0 | 92.0 | 98.0 | 103.0 | 105.5 | 106.5 |
| 40 | 100.5 | 99.0 | 99.0 | 92.0 | 86.5 | 84.0 | 84.0 | 86.0 | 90.0 | 95.5 | 100.0 | 101.5 | 101.5 |
| 50 | 98.0 | 96.0 | 95.5 | 89.5 | 84.0 | 81.0 | 81.0 | 83.5 | 87.0 | 92.5 | 96.5 | 98.0 | 98.5 |
| 60 | 93.5 | 91.0 | 90.5 | 85.5 | 80.0 | 77.0 | 77.0 | 79.5 | 82.5 | 88.0 | 92.0 | 93.0 | 93.5 |
| 70 | 86.5 | 83.5 | 84.0 | 79.5 | 74.5 | 71.5 | 71.5 | 73.5 | 76.5 | 82.0 | 85.5 | 86.0 | 87.0 |
| 80 | 76.5 | 74.5 | 74.5 | 71.0 | 69.5 | 64.0 | 64.0 | 65.5 | 69.0 | 73.5 | 77.0 | 77.5 | 78.0 |
| 85 | 70.5 | 67.5 | 68.0 | 65.5 | 61.0 | 59.0 | 59.0 | 61.0 | 64.0 | 69.0 | 72.5 | 73.0 | 73.0 |
| 90 | 62.5 | 59.5 | 59.5 | 57.5 | 55.0 | 53.5 | 53.5 | 59.5 | 59.0 | 63.0 | 67.5 | 67.5 | 67.5 |
| 95 | 54.5 | 50.0 | 50.5 | 49.0 | 47.5 | 46.5 | 46.5 | 48.0 | 52.0 | 56.5 | 60.5 | 60.5 | 60.0 |
| 100 | 42.0 | 36.0 | 37.0 | 36.5 | 36.5 | 36.5 | 37.0 | 39.0 | 42.5 | 47.5 | 51.0 | 51.0 | 51.0 |
| 105 | 22.5 | 17.5 | 18.5 | 20.5 | 20.5 | 22.0 | 22.5 | 23.0 | 26.0 | 30.0 | 31.5 | 31.0 | 31.5 |

Dimension H : 108.7 mm

Measurement around the head : 610 mm

Table 2 (concluded)

| 2-O | | | | | | | | | | | | | |
|------------------------------------|-------------|-------|-------|------|------|------|------|------|------|-------|-------|-------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 108.5 | 107.5 | 103.5 | 96.0 | 90.5 | 87.5 | 87.0 | 90.0 | 94.5 | 100.0 | 105.0 | 108.0 | 108.5 |
| 20 | 106.5 | 105.5 | 103.0 | 96.0 | 90.5 | 87.5 | 87.0 | 90.0 | 94.5 | 100.0 | 105.0 | 108.0 | 107.5 |
| 40 | 101.5 | 101.5 | 100.5 | 93.5 | 88.5 | 85.5 | 85.5 | 88.5 | 92.5 | 98.0 | 103.0 | 103.0 | 103.5 |
| 50 | 98.0 | 97.5 | 97.0 | 90.5 | 85.5 | 82.5 | 83.0 | 85.5 | 90.0 | 95.0 | 100.0 | 100.0 | 100.5 |
| 60 | 93.0 | 93.0 | 92.0 | 88.0 | 81.0 | 78.5 | 78.5 | 81.5 | 85.5 | 90.5 | 95.0 | 95.0 | 95.0 |
| 70 | 86.5 | 86.5 | 86.0 | 80.5 | 70.0 | 73.5 | 73.5 | 76.0 | 80.0 | 85.0 | 89.0 | 89.0 | 89.0 |
| 80 | 76.0 | 76.5 | 76.5 | 72.5 | 68.0 | 66.0 | 66.5 | 69.0 | 72.5 | 77.0 | 81.0 | 80.5 | 80.5 |
| 85 | 69.5 | 69.5 | 70.0 | 67.5 | 62.5 | 61.5 | 62.0 | 64.5 | 67.5 | 72.5 | 76.0 | 76.0 | 76.0 |
| 90 | 62.5 | 62.5 | 62.5 | 60.0 | 57.0 | 55.5 | 56.5 | 58.5 | 62.0 | 67.0 | 70.0 | 70.0 | 70.0 |
| 95 | 54.0 | 54.0 | 54.0 | 52.5 | 50.0 | 49.0 | 49.5 | 51.5 | 55.5 | 60.5 | 64.0 | 63.5 | 64.0 |
| 100 | 42.0 | 41.5 | 41.5 | 41.0 | 41.0 | 41.5 | 41.5 | 43.5 | 47.0 | 52.0 | 55.5 | 55.5 | 54.5 |
| 105 | 27.5 | 27.0 | 26.5 | 27.0 | 27.5 | 28.0 | 27.5 | 29.0 | 31.5 | 36.0 | 37.5 | 38.0 | 38.5 |

Dimension H : 110.0 mm

Measurement around the head : 620 mm

| 2-P | | | | | | | | | | | | | |
|------------------------------------|-------------|-------|-------|------|------|------|------|------|------|-------|-------|-------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 110.0 | 108.5 | 106.0 | 98.0 | 92.0 | 89.0 | 88.5 | 91.5 | 96.0 | 101.0 | 106.5 | 109.5 | 110.0 |
| 20 | 108.0 | 107.0 | 105.5 | 98.0 | 92.0 | 89.0 | 88.5 | 91.5 | 96.0 | 101.0 | 106.5 | 108.5 | 109.5 |
| 40 | 103.5 | 103.5 | 102.0 | 95.5 | 89.5 | 87.0 | 87.0 | 89.5 | 94.0 | 98.5 | 104.0 | 104.5 | 105.5 |
| 50 | 100.0 | 100.0 | 98.5 | 92.5 | 87.0 | 84.5 | 84.5 | 87.0 | 91.0 | 95.5 | 100.5 | 101.5 | 102.5 |
| 60 | 95.0 | 95.0 | 93.5 | 88.0 | 83.0 | 80.5 | 81.0 | 83.5 | 87.0 | 91.5 | 96.0 | 97.0 | 97.0 |
| 70 | 87.5 | 87.5 | 87.0 | 82.0 | 77.5 | 75.5 | 76.0 | 78.5 | 82.0 | 86.0 | 90.0 | 90.5 | 90.5 |
| 80 | 78.5 | 78.5 | 77.5 | 74.5 | 70.0 | 68.5 | 68.5 | 70.5 | 74.0 | 78.0 | 82.0 | 82.5 | 82.5 |
| 85 | 72.5 | 72.5 | 72.0 | 69.5 | 65.5 | 64.0 | 63.5 | 65.5 | 69.0 | 73.0 | 77.0 | 77.5 | 77.5 |
| 90 | 65.5 | 65.5 | 65.5 | 63.0 | 59.5 | 58.0 | 58.0 | 59.5 | 63.5 | 68.0 | 72.0 | 72.5 | 72.0 |
| 95 | 57.5 | 57.5 | 57.0 | 55.0 | 53.5 | 52.0 | 52.0 | 53.5 | 57.5 | 62.0 | 66.5 | 67.0 | 66.0 |
| 100 | 47.5 | 46.0 | 45.5 | 45.0 | 44.5 | 44.0 | 44.0 | 46.0 | 49.0 | 54.0 | 58.0 | 58.5 | 58.5 |
| 105 | 31.0 | 31.5 | 31.5 | 32.5 | 33.0 | 33.5 | 33.5 | 36.5 | 39.0 | 44.0 | 47.0 | 48.0 | 48.0 |
| 110 | 12.0 | 12.5 | 13.5 | 12.5 | 14.0 | 15.0 | 15.0 | 17.0 | 18.5 | 23.5 | 24.5 | 25.5 | 21.5 |

Dimension H : 111.8 mm

Measurement around the head : 630 mm

| 2-Q | | | | | | | | | | | | | |
|------------------------------------|-------------|-------|-------|------|------|------|------|------|------|-------|-------|-------|--------------|
| Height Above Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 112.0 | 110.0 | 107.0 | 99.5 | 93.5 | 90.5 | 90.0 | 92.0 | 97.5 | 102.5 | 108.0 | 110.5 | 112.0 |
| 20 | 110.0 | 108.5 | 106.5 | 99.5 | 93.5 | 90.5 | 90.0 | 92.0 | 97.5 | 102.5 | 108.0 | 110.0 | 111.5 |
| 40 | 105.0 | 104.5 | 103.5 | 97.0 | 91.5 | 88.5 | 88.5 | 91.0 | 95.0 | 100.0 | 105.0 | 106.0 | 106.5 |
| 50 | 101.5 | 101.5 | 100.0 | 94.0 | 88.5 | 86.0 | 85.5 | 88.0 | 92.0 | 97.0 | 102.0 | 102.5 | 103.0 |
| 60 | 96.5 | 97.0 | 96.0 | 90.0 | 84.5 | 82.0 | 81.5 | 84.0 | 88.5 | 93.0 | 97.5 | 97.5 | 97.5 |
| 70 | 90.0 | 90.5 | 90.0 | 84.5 | 79.0 | 77.0 | 76.5 | 79.0 | 83.0 | 88.0 | 92.0 | 92.0 | 93.0 |
| 80 | 80.0 | 81.0 | 80.5 | 75.5 | 71.0 | 69.5 | 69.5 | 71.5 | 75.5 | 81.0 | 85.5 | 84.5 | 85.5 |
| 85 | 74.0 | 75.5 | 75.0 | 71.0 | 66.5 | 65.0 | 65.5 | 67.0 | 71.0 | 76.5 | 81.0 | 80.0 | 80.5 |
| 90 | 68.0 | 69.0 | 68.0 | 65.0 | 61.0 | 60.0 | 60.0 | 61.5 | 66.0 | 71.0 | 75.0 | 75.0 | 75.5 |
| 95 | 60.5 | 61.0 | 61.0 | 58.5 | 55.0 | 54.0 | 54.0 | 55.0 | 60.0 | 65.0 | 69.5 | 70.0 | 69.5 |
| 100 | 50.0 | 49.5 | 52.0 | 49.0 | 47.5 | 46.5 | 46.5 | 48.0 | 52.5 | 57.0 | 61.5 | 62.0 | 62.0 |
| 105 | 36.5 | 36.5 | 38.0 | 37.0 | 36.5 | 36.0 | 37.0 | 37.5 | 41.5 | 47.5 | 52.0 | 52.0 | 52.0 |
| 110 | 18.0 | 19.5 | 19.5 | 20.5 | 20.0 | 20.5 | 21.0 | 21.5 | 26.0 | 26.5 | 32.5 | 34.5 | 34.5 |

Dimension H : 113.5 mm

Measurement around the head : 640 mm

Table 3 Depth Below Reference Line

(Clauses 2.3 and 3.1)

All dimensions in millimetres.

| 3-A | | | | | | | | | | | | | |
|-----------------------------|----------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 88.0 | 86.5 | 83.0 | 75.5 | 70.0 | 67.0 | 66.5 | 69.5 | 73.5 | 78.5 | 84.0 | 87.0 | 88.0 |
| -11.1 | 88.0 | 86.5 | 82.5 | 74.5 | 68.5 | 66.0 | 66.0 | 68.5 | 72.0 | 7.0 | 81.5 | 84.5 | 85.0 |
| -19.9 | 88.0 | 88.0 | 82.5 | 74.0 | 66.5 | 63.0 | 61.5 | 64.5 | 67.5 | 72.5 | 77.0 | 80.0 | 80.5 |
| -30.6 | 88.0 | 89.5 | 81.0 | 71.5 | 65.0 | 62.0 | 56.0 | 58.0 | 61.5 | 66.5 | 71.0 | 73.5 | 74.0 |
| -39.4 | 88.0 | 89.5 | 79.0 | 69.0 | 63.0 | 60.0 | 54.0 | 55.0 | 58.0 | 61.5 | 65.0 | 67.5 | 67.0 |
| -52.5 | 88.0 | 89.5 | 77.0 | 67.0 | 60.5 | 54.0 | 51.5 | 52.0 | 53.5 | 56.5 | 59.0 | 60.0 | 58.5 |
| -65.6 | 88.0 | 89.5 | 75.5 | 65.0 | 58.5 | 52.5 | 50.5 | 51.0 | 51.5 | 52.5 | 53.0 | 54.0 | 54.5 |
| -74.4 | 88.0 | 89.5 | 73.5 | 62.5 | 58.0 | 51.0 | 50.5 | 51.0 | 51.5 | 52.5 | 53.0 | 54.0 | 54.5 |
| -78.8 | 88.0 | 89.5 | 71.5 | 60.5 | 49.5 | 50.0 | 50.5 | 51.0 | 51.5 | 52.5 | 53.0 | 54.0 | 54.5 |
| -84.4 | 88.0 | 89.5 | 69.5 | 47.5 | 49.5 | 50.0 | 50.5 | 51.0 | 51.5 | 52.5 | 53.0 | 54.0 | 54.5 |
| -92.8 | 88.0 | 92.0 | 47.5 | 47.5 | 49.5 | 50.0 | 50.5 | 51.0 | 51.5 | 52.5 | 53.0 | 54.0 | 54.5 |
| -119.0 | 47.0 | 47.0 | 47.5 | 47.5 | 49.5 | 50.0 | 50.5 | 51.0 | 51.5 | 52.5 | 53.0 | 54.0 | 54.5 |

Dimension *l* : 11.1 mm

Measurement around the head : 500 mm

| 3-B | | | | | | | | | | | | | |
|-----------------------------|----------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 89.5 | 88.0 | 84.5 | 76.5 | 71.5 | 68.5 | 68.0 | 71.0 | 75.0 | 80.5 | 86.0 | 89.0 | 89.5 |
| -11.3 | 89.5 | 88.0 | 84.0 | 75.5 | 69.5 | 67.0 | 67.0 | 69.5 | 73.0 | 78.5 | 82.5 | 86.0 | 86.5 |
| -20.2 | 89.5 | 89.5 | 84.0 | 75.0 | 67.5 | 64.0 | 62.5 | 65.5 | 68.5 | 74.0 | 78.5 | 81.5 | 82.0 |
| -31.1 | 89.5 | 91.0 | 82.5 | 72.5 | 66.0 | 63.0 | 57.0 | 59.0 | 62.5 | 67.5 | 72.0 | 74.5 | 75.0 |
| -40.0 | 89.5 | 91.0 | 80.0 | 70.5 | 64.0 | 61.0 | 54.5 | 56.0 | 58.5 | 62.5 | 66.5 | 68.5 | 68.0 |
| -53.4 | 89.5 | 91.0 | 78.5 | 68.0 | 61.5 | 54.5 | 52.5 | 53.0 | 54.5 | 57.5 | 60.0 | 61.0 | 59.5 |
| -66.7 | 89.5 | 91.0 | 76.5 | 66.0 | 59.5 | 53.5 | 51.0 | 52.0 | 52.5 | 53.5 | 54.0 | 54.5 | 55.0 |
| -75.6 | 89.5 | 91.0 | 74.5 | 63.5 | 58.5 | 51.5 | 51.0 | 52.0 | 52.5 | 53.5 | 54.0 | 54.5 | 55.0 |
| -80.0 | 89.5 | 91.0 | 72.5 | 61.5 | 50.0 | 50.5 | 51.0 | 52.0 | 52.5 | 53.5 | 54.0 | 54.5 | 55.0 |
| -85.9 | 89.5 | 91.0 | 70.5 | 48.5 | 50.0 | 50.5 | 51.0 | 52.0 | 52.5 | 53.5 | 54.0 | 54.5 | 55.0 |
| -94.3 | 89.5 | 93.5 | 48.0 | 48.5 | 50.0 | 50.5 | 51.0 | 52.0 | 52.5 | 53.5 | 54.0 | 54.5 | 55.0 |
| -121.0 | 47.5 | 47.5 | 48.0 | 48.5 | 50.0 | 50.5 | 51.0 | 52.0 | 52.5 | 53.5 | 54.0 | 54.5 | 55.0 |

Dimension *l* : 11.3 mm

Measurement around the head : 510 mm

| 3-C | | | | | | | | | | | | | |
|-----------------------------|----------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 91.5 | 89.5 | 86.0 | 79.0 | 72.5 | 70.0 | 69.5 | 72.5 | 77.0 | 82.0 | 87.5 | 90.5 | 91.5 |
| -11.5 | 91.5 | 89.5 | 85.5 | 77.0 | 71.0 | 68.5 | 68.5 | 71.0 | 74.5 | 80.0 | 84.5 | 87.5 | 88.0 |
| -20.6 | 91.5 | 91.0 | 85.5 | 76.5 | 69.0 | 65.5 | 64.0 | 66.5 | 70.0 | 75.5 | 80.0 | 83.0 | 83.5 |
| -31.8 | 91.5 | 92.5 | 84.0 | 74.0 | 67.0 | 64.5 | 58.0 | 60.5 | 64.0 | 69.0 | 73.5 | 76.0 | 76.5 |
| -40.8 | 91.5 | 92.5 | 81.5 | 71.5 | 65.5 | 62.0 | 56.0 | 57.0 | 60.0 | 64.0 | 67.5 | 70.0 | 69.5 |
| -54.4 | 91.5 | 92.5 | 80.0 | 69.5 | 62.5 | 56.0 | 53.5 | 54.0 | 55.5 | 58.5 | 61.0 | 62.0 | 61.0 |
| -68.0 | 91.5 | 92.5 | 78.0 | 67.0 | 61.0 | 54.5 | 52.0 | 53.0 | 53.5 | 54.5 | 55.0 | 56.0 | 56.5 |
| -77.1 | 91.5 | 92.5 | 76.0 | 65.0 | 60.0 | 52.5 | 52.0 | 53.0 | 53.5 | 54.5 | 55.0 | 56.0 | 56.5 |
| -81.7 | 91.5 | 92.5 | 74.0 | 62.5 | 51.0 | 51.5 | 52.0 | 53.0 | 53.5 | 54.5 | 55.0 | 56.0 | 56.5 |
| -87.6 | 91.5 | 92.5 | 72.0 | 49.5 | 51.0 | 51.5 | 52.0 | 53.0 | 53.5 | 54.5 | 55.0 | 56.0 | 56.5 |
| -96.2 | 91.5 | 95.5 | 49.0 | 49.5 | 51.0 | 51.5 | 52.0 | 53.0 | 53.5 | 54.5 | 55.0 | 56.0 | 56.5 |
| -123.4 | 48.5 | 48.5 | 49.0 | 49.5 | 51.0 | 51.5 | 52.0 | 53.0 | 53.5 | 54.5 | 55.0 | 56.0 | 56.5 |

Dimension *l* : 11.5 mm

Measurement around the head : 520 mm

Table 3 (continued)

| 3-D | | | | | | | | | | | | | |
|-----------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|--------------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 93.0 | 91.0 | 88.0 | 81.0 | 74.5 | 71.5 | 71.0 | 74.0 | 78.0 | 84.0 | 89.5 | 92.0 | 93.0 |
| -11.7 | 93.0 | 91.0 | 87.0 | 78.5 | 72.0 | 69.5 | 69.5 | 72.0 | 75.5 | 81.0 | 85.5 | 89.0 | 89.0 |
| -20.9 | 93.0 | 92.5 | 87.0 | 78.0 | 70.0 | 66.5 | 65.0 | 68.0 | 71.0 | 76.5 | 81.0 | 84.5 | 85.5 |
| -32.3 | 93.0 | 94.0 | 85.5 | 75.0 | 68.0 | 65.5 | 59.0 | 61.5 | 65.0 | 70.0 | 74.5 | 77.5 | 78.0 |
| -41.5 | 93.0 | 94.0 | 83.0 | 73.0 | 66.5 | 63.0 | 56.5 | 58.0 | 61.0 | 65.0 | 68.5 | 71.0 | 70.0 |
| -55.3 | 93.0 | 94.0 | 81.0 | 70.5 | 63.5 | 56.5 | 54.5 | 55.0 | 56.0 | 59.5 | 62.0 | 63.0 | 62.0 |
| -69.1 | 93.0 | 94.0 | 79.5 | 68.0 | 62.0 | 55.5 | 53.0 | 54.0 | 54.5 | 55.5 | 56.0 | 56.6 | 57.0 |
| -78.5 | 93.0 | 94.0 | 77.5 | 66.0 | 61.0 | 53.5 | 53.0 | 54.0 | 54.5 | 55.5 | 56.0 | 56.5 | 57.0 |
| -83.0 | 93.0 | 94.0 | 75.0 | 63.5 | 52.0 | 52.5 | 53.0 | 54.0 | 54.5 | 55.5 | 56.0 | 56.5 | 57.0 |
| -89.0 | 93.0 | 94.0 | 73.5 | 50.5 | 52.0 | 52.5 | 53.0 | 54.0 | 54.5 | 55.5 | 56.0 | 56.5 | 57.0 |
| -97.7 | 93.0 | 97.0 | 50.0 | 50.5 | 52.0 | 52.5 | 53.0 | 54.0 | 54.5 | 55.5 | 56.0 | 56.5 | 57.0 |
| -125.4 | 49.5 | 49.5 | 50.0 | 50.5 | 52.0 | 52.5 | 53.0 | 54.0 | 54.5 | 55.5 | 56.0 | 56.5 | 57.0 |

Dimension I : 11.7 mm

Measurement around the head : 530 mm

| 3-E | | | | | | | | | | | | | |
|-----------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|--------------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 94.5 | 93.0 | 90.0 | 82.0 | 76.5 | 73.5 | 73.0 | 76.0 | 80.0 | 85.0 | 91.0 | 94.0 | 94.5 |
| -11.9 | 94.5 | 93.0 | 88.5 | 79.5 | 73.0 | 70.5 | 70.5 | 73.0 | 77.0 | 82.5 | 87.0 | 90.5 | 91.0 |
| -21.3 | 94.5 | 94.0 | 88.5 | 79.0 | 71.0 | 67.5 | 66.0 | 69.0 | 72.0 | 77.5 | 82.5 | 85.5 | 86.0 |
| -32.8 | 94.5 | 95.5 | 86.5 | 76.5 | 69.5 | 66.5 | 60.0 | 62.5 | 66.0 | 71.0 | 76.0 | 78.5 | 79.0 |
| -42.1 | 94.5 | 95.5 | 84.5 | 74.0 | 67.5 | 64.0 | 57.5 | 59.0 | 62.0 | 66.0 | 70.0 | 72.0 | 71.5 |
| -56.2 | 94.5 | 95.5 | 82.5 | 71.5 | 64.5 | 57.5 | 55.5 | 55.5 | 57.0 | 60.5 | 63.0 | 64.0 | 63.0 |
| -70.2 | 94.5 | 95.5 | 80.5 | 69.5 | 62.5 | 56.0 | 54.0 | 55.0 | 55.5 | 56.0 | 56.5 | 57.5 | 58.0 |
| -79.6 | 94.5 | 95.5 | 78.5 | 67.0 | 62.0 | 54.5 | 54.0 | 53.0 | 55.5 | 56.0 | 56.5 | 57.5 | 58.0 |
| -84.3 | 94.5 | 95.5 | 76.5 | 64.5 | 53.0 | 53.5 | 54.0 | 55.0 | 55.5 | 56.0 | 56.5 | 57.5 | 58.0 |
| -90.4 | 94.5 | 95.5 | 74.5 | 51.0 | 53.0 | 53.5 | 54.0 | 55.0 | 55.5 | 56.0 | 56.5 | 57.5 | 58.0 |
| -99.3 | 94.5 | 98.5 | 50.5 | 51.0 | 53.0 | 53.5 | 54.0 | 55.0 | 55.5 | 56.0 | 56.5 | 57.5 | 58.0 |
| -127.4 | 50.0 | 50.0 | 50.5 | 51.0 | 53.0 | 53.5 | 54.0 | 55.0 | 55.5 | 56.0 | 56.5 | 57.5 | 58.0 |

Dimension I : 11.9 mm

Measurement around the head : 540 mm

| 3-F | | | | | | | | | | | | | |
|-----------------------------------|-------------|-------|------|------|------|------|------|------|------|------|------|------|--------------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 96.0 | 94.5 | 91.0 | 83.5 | 78.0 | 74.5 | 74.5 | 77.0 | 81.0 | 86.5 | 92.0 | 95.0 | 96.0 |
| -12.1 | 96.0 | 94.5 | 90.0 | 81.0 | 74.0 | 72.0 | 72.0 | 74.0 | 78.0 | 83.5 | 88.5 | 92.0 | 92.5 |
| -21.6 | 96.0 | 95.5 | 90.0 | 80.5 | 72.5 | 68.5 | 67.0 | 70.0 | 73.0 | 79.0 | 83.5 | 87.0 | 87.5 |
| -33.3 | 96.0 | 97.0 | 88.0 | 77.5 | 70.5 | 67.5 | 61.0 | 63.5 | 67.0 | 72.5 | 77.0 | 80.0 | 80.5 |
| -42.8 | 96.0 | 97.0 | 85.5 | 75.0 | 68.5 | 65.0 | 58.5 | 60.0 | 63.0 | 67.0 | 71.0 | 73.0 | 73.0 |
| -57.0 | 96.0 | 97.0 | 83.5 | 73.0 | 65.5 | 58.5 | 56.0 | 56.5 | 58.0 | 61.5 | 64.0 | 65.0 | 63.5 |
| -71.3 | 96.0 | 97.0 | 82.0 | 70.5 | 63.5 | 57.0 | 54.5 | 55.5 | 56.0 | 57.0 | 57.5 | 58.5 | 59.0 |
| -80.9 | 96.0 | 97.0 | 80.0 | 68.0 | 63.0 | 55.0 | 54.5 | 55.5 | 56.0 | 57.0 | 57.5 | 58.5 | 59.0 |
| -85.6 | 96.0 | 97.0 | 77.5 | 65.5 | 53.5 | 54.0 | 54.5 | 55.5 | 56.0 | 57.0 | 57.5 | 58.5 | 59.0 |
| -91.8 | 96.0 | 97.0 | 75.5 | 52.0 | 53.5 | 54.0 | 54.5 | 55.5 | 56.0 | 57.0 | 57.5 | 58.5 | 59.0 |
| -100.8 | 96.0 | 100.0 | 51.5 | 52.0 | 53.5 | 54.0 | 54.5 | 55.5 | 56.0 | 57.0 | 57.5 | 58.5 | 59.0 |
| -129.4 | 51.0 | 51.0 | 51.5 | 52.0 | 53.5 | 54.0 | 54.5 | 55.5 | 56.0 | 57.0 | 57.5 | 58.5 | 59.0 |

Dimension I : 12.1 mm

Measurement around the head : 550 mm

Table 3 (continued)

| 3-G | | | | | | | | | | | | | |
|-----------------------------------|-------------|-------|------|------|------|------|------|------|------|------|------|------|--------------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 97.5 | 95.5 | 93.0 | 85.5 | 79.5 | 76.0 | 76.0 | 78.5 | 83.0 | 88.5 | 94.0 | 97.0 | 97.5 |
| -12.3 | 97.5 | 95.5 | 91.5 | 82.0 | 75.5 | 73.0 | 73.0 | 75.5 | 79.0 | 85.0 | 90.0 | 93.0 | 93.5 |
| -21.9 | 97.5 | 97.0 | 91.5 | 81.5 | 73.5 | 69.5 | 68.0 | 71.0 | 74.5 | 80.0 | 85.0 | 88.5 | 89.0 |
| -33.8 | 97.5 | 98.5 | 89.5 | 78.5 | 71.5 | 68.5 | 62.0 | 64.0 | 68.0 | 73.5 | 78.0 | 81.0 | 81.5 |
| -43.5 | 97.5 | 98.5 | 87.0 | 76.5 | 69.5 | 66.0 | 59.5 | 61.0 | 63.5 | 68.0 | 72.0 | 74.5 | 74.0 |
| -58.0 | 97.5 | 98.5 | 85.5 | 74.0 | 66.5 | 59.5 | 57.0 | 57.5 | 59.0 | 62.5 | 65.0 | 66.0 | 64.5 |
| -72.4 | 97.5 | 98.5 | 83.0 | 71.5 | 64.5 | 58.0 | 55.5 | 56.5 | 57.0 | 58.0 | 58.5 | 59.5 | 60.0 |
| -82.1 | 97.5 | 98.5 | 81.0 | 69.0 | 63.5 | 56.0 | 55.5 | 56.5 | 57.0 | 58.0 | 58.5 | 59.5 | 60.0 |
| -86.9 | 97.5 | 98.5 | 78.5 | 66.5 | 54.5 | 55.0 | 55.5 | 56.5 | 57.0 | 58.0 | 58.5 | 59.5 | 60.0 |
| -93.2 | 97.5 | 98.5 | 77.0 | 52.5 | 54.5 | 55.0 | 55.5 | 56.5 | 57.0 | 58.0 | 58.5 | 59.5 | 60.0 |
| -102.4 | 97.5 | 101.5 | 52.0 | 52.5 | 54.5 | 55.0 | 55.5 | 56.5 | 57.0 | 58.0 | 58.5 | 59.5 | 60.0 |
| -131.4 | 51.5 | 51.5 | 52.0 | 52.5 | 54.5 | 55.0 | 55.5 | 56.5 | 57.0 | 58.0 | 58.5 | 59.5 | 60.0 |

Dimension *l* : 12.3 mm

Measurement around the head : 560 mm

| 3-J | | | | | | | | | | | | | |
|-----------------------------------|-------------|-------|------|------|------|------|------|------|------|------|------|-------|--------------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 101.0 | 99.5 | 95.5 | 88.5 | 82.5 | 79.5 | 79.5 | 82.0 | 86.0 | 92.0 | 97.0 | 100.5 | 101.0 |
| -12.7 | 101.0 | 99.5 | 94.5 | 85.0 | 78.0 | 75.5 | 75.5 | 78.0 | 82.0 | 88.0 | 93.0 | 95.5 | 97.0 |
| -22.7 | 101.0 | 100.5 | 94.5 | 84.5 | 76.0 | 72.0 | 70.5 | 73.5 | 77.0 | 83.0 | 88.0 | 91.5 | 92.0 |
| -35.0 | 101.0 | 102.0 | 92.5 | 81.5 | 74.0 | 71.0 | 64.0 | 66.5 | 70.5 | 76.0 | 81.0 | 84.0 | 84.5 |
| -45.0 | 101.0 | 102.0 | 90.0 | 79.0 | 72.0 | 68.5 | 61.5 | 63.0 | 66.0 | 70.5 | 74.5 | 77.0 | 76.5 |
| -60.0 | 101.0 | 102.0 | 88.0 | 76.5 | 69.0 | 61.5 | 59.0 | 59.5 | 61.0 | 64.5 | 67.5 | 68.5 | 67.0 |
| -75.0 | 101.0 | 102.0 | 86.0 | 74.0 | 67.0 | 60.0 | 57.5 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 |
| -85.0 | 101.0 | 102.0 | 84.0 | 71.5 | 66.0 | 58.0 | 57.5 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 |
| -90.0 | 101.0 | 102.0 | 81.5 | 69.0 | 56.5 | 57.0 | 57.5 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 |
| -96.5 | 101.0 | 102.0 | 79.5 | 54.5 | 56.5 | 57.0 | 57.5 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 |
| -106.0 | 101.0 | 105.0 | 54.0 | 54.5 | 56.5 | 57.0 | 57.5 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 |
| -136.0 | 53.5 | 53.5 | 54.0 | 54.5 | 56.5 | 57.0 | 57.5 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 |

Dimension *l* : 12.7 mm

Measurement around the head : 570 mm

| 3-K | | | | | | | | | | | | | |
|-----------------------------------|-------------|-------|------|------|------|------|------|------|------|------|------|-------|--------------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 102.5 | 101.0 | 97.0 | 90.0 | 84.0 | 81.5 | 81.0 | 83.5 | 88.0 | 93.0 | 98.5 | 101.5 | 102.5 |
| -12.9 | 102.5 | 101.0 | 96.0 | 86.0 | 79.0 | 76.5 | 76.5 | 79.0 | 83.0 | 89.5 | 94.5 | 98.0 | 98.5 |
| -23.0 | 102.5 | 102.0 | 96.0 | 86.0 | 77.0 | 73.0 | 71.5 | 74.5 | 78.0 | 84.0 | 89.5 | 93.0 | 93.5 |
| -35.5 | 102.5 | 103.5 | 94.0 | 82.5 | 75.0 | 72.0 | 65.0 | 67.5 | 71.5 | 77.0 | 82.0 | 85.0 | 85.5 |
| -45.7 | 102.5 | 103.5 | 91.5 | 80.0 | 73.0 | 63.5 | 62.5 | 64.0 | 67.0 | 71.5 | 75.5 | 78.0 | 77.5 |
| -60.9 | 102.5 | 103.5 | 89.5 | 77.5 | 70.0 | 62.5 | 60.0 | 60.5 | 62.0 | 65.5 | 68.5 | 69.5 | 63.0 |
| -76.1 | 102.5 | 103.5 | 87.5 | 75.0 | 68.0 | 61.0 | 58.5 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 |
| -86.2 | 102.5 | 103.5 | 85.5 | 72.5 | 67.0 | 59.0 | 58.5 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 |
| -91.3 | 102.5 | 103.5 | 82.5 | 70.0 | 57.5 | 58.0 | 58.5 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 |
| -97.9 | 102.5 | 103.5 | 80.5 | 55.5 | 57.5 | 58.0 | 58.5 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 |
| -107.6 | 102.5 | 106.5 | 54.5 | 55.5 | 57.5 | 58.0 | 58.5 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 |
| -138.0 | 54.5 | 54.5 | 54.5 | 55.5 | 57.5 | 58.0 | 58.5 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 |

Dimension *l* : 12.9 mm

Measurement around the head : 580 mm

Table 3 (continued)

| 3-L | | | | | | | | | | | | | |
|-----------------------------|----------|-------|------|------|------|------|------|------|------|------|-------|-------|-----------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 104.0 | 103.0 | 99.5 | 91.5 | 86.0 | 83.0 | 82.5 | 85.0 | 89.0 | 94.5 | 100.5 | 103.5 | 104.0 |
| -13.1 | 104.0 | 103.0 | 97.0 | 87.5 | 80.0 | 77.5 | 77.5 | 80.0 | 84.5 | 90.5 | 95.5 | 99.0 | 99.5 |
| -23.3 | 104.0 | 103.5 | 97.0 | 87.0 | 78.0 | 74.0 | 72.5 | 75.5 | 79.0 | 85.5 | 90.5 | 94.0 | 94.5 |
| -36.0 | 104.0 | 105.0 | 95.0 | 84.0 | 76.0 | 73.0 | 66.0 | 68.5 | 72.5 | 78.0 | 83.5 | 86.5 | 87.0 |
| -46.3 | 104.0 | 105.0 | 92.5 | 81.0 | 74.0 | 70.5 | 63.0 | 65.0 | 68.0 | 72.5 | 76.5 | 79.0 | 78.5 |
| -61.7 | 104.0 | 105.0 | 90.5 | 78.5 | 71.0 | 63.0 | 60.5 | 61.0 | 62.5 | 66.5 | 69.5 | 70.5 | 69.0 |
| -77.1 | 104.0 | 105.0 | 88.5 | 76.0 | 69.0 | 61.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 | 63.0 | 64.0 |
| -87.4 | 104.0 | 105.0 | 86.5 | 73.5 | 68.0 | 59.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 | 63.0 | 64.0 |
| -92.6 | 104.0 | 105.0 | 83.5 | 71.0 | 58.0 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 | 63.0 | 64.0 |
| -99.2 | 104.0 | 105.0 | 82.0 | 56.0 | 58.0 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 | 63.0 | 64.0 |
| -109.0 | 104.0 | 108.0 | 55.5 | 56.0 | 58.0 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 | 63.0 | 64.0 |
| -139.9 | 55.0 | 55.0 | 55.5 | 56.0 | 58.0 | 58.5 | 59.0 | 60.0 | 60.5 | 61.5 | 62.0 | 63.0 | 64.0 |

Dimension l : 13.1 mm

Measurement around the head : 590 mm

| 3-M | | | | | | | | | | | | | |
|-----------------------------|----------|-------|-------|------|------|------|------|------|------|------|-------|-------|-----------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 106.0 | 104.0 | 101.0 | 93.5 | 87.0 | 84.5 | 84.0 | 86.5 | 91.0 | 96.0 | 102.0 | 106.0 | 106.0 |
| -13.3 | 106.0 | 104.0 | 98.5 | 88.5 | 81.5 | 79.0 | 79.0 | 81.5 | 85.5 | 92.0 | 97.0 | 100.5 | 101.5 |
| -23.7 | 106.0 | 105.0 | 98.5 | 88.0 | 79.5 | 75.0 | 73.5 | 76.5 | 80.5 | 86.5 | 92.0 | 95.5 | 96.0 |
| -36.5 | 106.0 | 106.5 | 96.5 | 85.0 | 77.5 | 74.0 | 67.0 | 69.5 | 73.5 | 79.5 | 84.5 | 87.5 | 88.0 |
| -47.0 | 106.0 | 106.5 | 94.0 | 82.5 | 75.0 | 71.5 | 64.0 | 66.0 | 69.0 | 73.5 | 78.0 | 80.5 | 80.0 |
| -62.6 | 106.0 | 106.5 | 92.0 | 80.0 | 72.0 | 64.0 | 61.5 | 62.0 | 63.5 | 67.5 | 70.5 | 71.5 | 70.0 |
| -78.3 | 106.0 | 106.5 | 90.0 | 77.0 | 70.0 | 62.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 | 64.0 | 64.5 |
| -88.7 | 106.0 | 106.5 | 87.5 | 74.5 | 69.0 | 60.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 | 64.0 | 64.5 |
| -94.0 | 106.0 | 106.5 | 85.0 | 72.0 | 59.0 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 | 64.0 | 64.5 |
| -100.7 | 106.0 | 106.5 | 83.0 | 57.0 | 59.0 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 | 64.0 | 64.5 |
| -110.7 | 106.0 | 109.5 | 56.5 | 57.0 | 59.0 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 | 64.0 | 64.5 |
| -142.0 | 56.0 | 56.0 | 56.5 | 57.0 | 59.0 | 59.5 | 60.0 | 61.0 | 61.5 | 62.5 | 63.0 | 64.0 | 64.5 |

Dimension l : 13.3 mm

Measurement around the head : 600 mm

| 3-N | | | | | | | | | | | | | |
|-----------------------------|----------|-------|-------|------|------|------|------|------|------|------|-------|-------|-----------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 107.0 | 105.5 | 102.5 | 95.0 | 89.0 | 86.0 | 85.5 | 88.0 | 92.0 | 98.0 | 103.0 | 106.0 | 107.0 |
| -13.5 | 107.0 | 105.5 | 100.0 | 90.0 | 82.5 | 80.0 | 80.0 | 82.5 | 87.0 | 93.5 | 98.5 | 102.5 | 103.0 |
| -24.1 | 107.0 | 106.5 | 100.0 | 89.5 | 80.5 | 76.5 | 75.0 | 78.0 | 81.5 | 88.0 | 93.5 | 97.0 | 97.5 |
| -37.1 | 107.0 | 108.0 | 98.0 | 86.5 | 78.5 | 75.5 | 68.0 | 70.5 | 75.0 | 80.5 | 86.0 | 89.0 | 89.5 |
| -47.7 | 107.0 | 108.0 | 95.5 | 84.0 | 76.5 | 72.5 | 65.0 | 67.0 | 70.0 | 75.0 | 79.0 | 81.5 | 81.0 |
| -63.6 | 107.0 | 108.0 | 93.5 | 81.0 | 73.0 | 65.0 | 62.5 | 63.0 | 64.5 | 68.5 | 71.5 | 72.5 | 71.0 |
| -79.5 | 107.0 | 108.0 | 91.0 | 78.5 | 71.0 | 63.5 | 61.0 | 62.0 | 62.5 | 63.5 | 64.0 | 65.0 | 66.0 |
| -90.1 | 107.0 | 108.0 | 89.0 | 76.0 | 70.0 | 61.5 | 61.0 | 62.0 | 62.5 | 63.5 | 64.0 | 65.0 | 66.0 |
| -95.4 | 107.0 | 108.0 | 86.5 | 73.0 | 60.0 | 60.5 | 61.0 | 62.0 | 62.5 | 63.5 | 64.0 | 65.0 | 66.0 |
| -102.3 | 107.0 | 108.0 | 84.5 | 58.0 | 60.0 | 60.5 | 61.0 | 62.0 | 62.5 | 63.5 | 64.0 | 65.0 | 66.0 |
| -112.4 | 107.0 | 111.5 | 57.5 | 58.0 | 60.0 | 60.5 | 61.0 | 62.0 | 62.5 | 63.5 | 64.0 | 65.0 | 66.0 |
| -144.2 | 56.5 | 56.5 | 57.5 | 58.0 | 60.0 | 60.5 | 61.0 | 62.0 | 62.5 | 63.5 | 64.0 | 65.0 | 66.0 |

Dimension l : 13.5 mm

Measurement around the head : 610 mm

Table 3 (concluded)

| 3-O | | | | | | | | | | | | | |
|-----------------------------|----------|-------|-------|------|------|------|------|------|------|-------|-------|-------|-----------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 108.5 | 107.5 | 103.5 | 96.0 | 90.5 | 87.0 | 87.0 | 90.0 | 94.5 | 100.0 | 105.0 | 108.0 | 108.5 |
| -13.7 | 108.5 | 107.5 | 101.5 | 91.5 | 84.0 | 81.0 | 81.0 | 84.0 | 88.0 | 94.5 | 100.0 | 108.5 | 104.5 |
| -24.4 | 108.5 | 108.0 | 101.5 | 91.0 | 81.5 | 77.5 | 76.0 | 79.0 | 83.0 | 89.0 | 94.5 | 98.5 | 99.0 |
| -37.6 | 108.5 | 109.5 | 99.5 | 87.5 | 79.5 | 76.5 | 69.0 | 71.5 | 76.0 | 81.5 | 87.0 | 90.5 | 91.0 |
| -48.4 | 108.5 | 109.5 | 97.0 | 85.0 | 77.5 | 73.5 | 66.0 | 67.5 | 71.0 | 76.0 | 80.0 | 83.5 | 82.0 |
| -64.5 | 108.5 | 109.5 | 94.5 | 82.0 | 74.0 | 66.0 | 63.5 | 64.0 | 65.5 | 69.5 | 72.5 | 73.5 | 72.0 |
| -80.6 | 108.5 | 109.5 | 92.5 | 79.5 | 72.0 | 64.5 | 62.0 | 63.0 | 63.5 | 64.5 | 65.0 | 66.0 | 66.5 |
| -91.4 | 108.5 | 109.5 | 90.5 | 77.0 | 71.0 | 62.0 | 62.0 | 63.0 | 63.5 | 64.5 | 65.0 | 66.0 | 66.5 |
| -96.8 | 108.5 | 109.5 | 87.5 | 74.0 | 60.5 | 61.0 | 62.0 | 63.0 | 63.5 | 64.5 | 65.0 | 66.0 | 66.5 |
| -103.8 | 108.5 | 109.5 | 85.5 | 58.5 | 60.5 | 61.0 | 62.0 | 63.0 | 63.5 | 64.5 | 65.0 | 66.0 | 66.5 |
| -114.0 | 108.5 | 113.0 | 58.0 | 58.5 | 60.5 | 61.0 | 62.0 | 63.0 | 63.5 | 64.5 | 65.0 | 66.0 | 66.5 |
| -146.2 | 57.5 | 57.5 | 58.0 | 58.5 | 60.5 | 61.0 | 62.0 | 63.0 | 63.5 | 64.5 | 65.0 | 66.0 | 66.5 |

Dimension *l* : 13.7 mm

Measurement around the head : 620 mm

| 3-P | | | | | | | | | | | | | |
|-----------------------------|----------|-------|-------|------|------|------|------|------|------|-------|-------|-------|-----------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 110.0 | 108.5 | 106.0 | 98.0 | 92.0 | 89.0 | 88.5 | 91.5 | 96.0 | 101.0 | 106.5 | 109.5 | 110.0 |
| -13.9 | 110.0 | 108.5 | 103.0 | 92.5 | 85.0 | 82.5 | 82.5 | 85.0 | 89.5 | 96.0 | 101.5 | 105.5 | 106.0 |
| -24.8 | 110.0 | 109.5 | 103.0 | 92.0 | 83.0 | 78.5 | 77.0 | 80.0 | 84.0 | 90.5 | 96.0 | 100.0 | 100.5 |
| -38.2 | 110.0 | 111.5 | 101.0 | 89.0 | 80.5 | 77.5 | 70.0 | 72.5 | 77.0 | 83.0 | 88.5 | 91.5 | 92.5 |
| -49.1 | 110.0 | 111.5 | 98.0 | 86.0 | 78.5 | 74.5 | 67.0 | 68.5 | 72.0 | 77.0 | 81.5 | 84.0 | 83.5 |
| -65.4 | 110.0 | 111.5 | 96.0 | 83.5 | 75.5 | 67.0 | 64.5 | 65.0 | 66.5 | 70.5 | 73.5 | 74.5 | 73.0 |
| -81.8 | 110.0 | 111.5 | 94.0 | 80.5 | 73.0 | 65.5 | 62.5 | 64.0 | 64.5 | 65.5 | 66.0 | 67.0 | 67.5 |
| -92.7 | 110.0 | 111.5 | 91.5 | 78.0 | 72.0 | 63.5 | 62.5 | 64.0 | 64.5 | 65.5 | 66.0 | 67.0 | 67.5 |
| -98.2 | 110.0 | 111.5 | 89.0 | 75.5 | 61.5 | 62.0 | 62.5 | 64.0 | 64.5 | 65.5 | 66.0 | 67.0 | 67.5 |
| -105.2 | 110.0 | 111.5 | 86.5 | 59.5 | 61.5 | 62.0 | 62.5 | 64.0 | 64.5 | 65.5 | 66.0 | 67.0 | 67.5 |
| -115.6 | 110.0 | 114.5 | 69.5 | 59.5 | 61.5 | 62.0 | 62.5 | 64.0 | 64.5 | 65.5 | 66.0 | 67.0 | 67.5 |
| -148.3 | 58.5 | 58.5 | 59.0 | 59.5 | 61.5 | 62.0 | 62.5 | 64.0 | 64.5 | 65.5 | 66.0 | 67.0 | 67.5 |

Dimension *l* : 13.9 mm

Measurement around the head : 630 mm

| 3-Q | | | | | | | | | | | | | |
|-----------------------------|----------|-------|-------|------|------|------|------|------|------|-------|-------|-------|-----------|
| Depth Below Reference Plane | 0° Front | 15° | 30° | 45° | 60° | 75° | 90° | 105° | 120° | 135° | 150° | 165° | 180° Back |
| 0 | 112.0 | 110.0 | 107.0 | 99.5 | 93.5 | 90.5 | 90.0 | 92.0 | 97.5 | 102.5 | 108.0 | 110.5 | 112.0 |
| -14.1 | 112.0 | 110.0 | 104.5 | 94.0 | 86.5 | 83.5 | 83.5 | 86.5 | 91.0 | 97.5 | 103.0 | 107.0 | 107.5 |
| -25.1 | 112.0 | 111.5 | 104.5 | 93.5 | 84.0 | 79.5 | 78.0 | 81.5 | 85.5 | 92.5 | 97.5 | 101.5 | 102.5 |
| -38.8 | 112.0 | 113.0 | 102.5 | 90.0 | 82.0 | 78.5 | 71.0 | 73.5 | 78.0 | 84.0 | 89.5 | 93.0 | 93.5 |
| -49.8 | 112.0 | 113.0 | 99.5 | 87.5 | 79.5 | 76.0 | 68.0 | 70.0 | 73.0 | 78.0 | 82.5 | 85.5 | 84.5 |
| -66.4 | 112.0 | 113.0 | 97.5 | 84.5 | 76.5 | 68.0 | 65.5 | 66.0 | 67.5 | 71.5 | 74.5 | 76.0 | 74.0 |
| -83.0 | 112.0 | 113.0 | 95.0 | 82.0 | 74.0 | 66.5 | 63.5 | 65.0 | 65.5 | 66.5 | 67.0 | 68.0 | 68.5 |
| -94.1 | 112.0 | 113.0 | 93.0 | 79.0 | 73.0 | 64.0 | 63.5 | 65.0 | 65.5 | 66.5 | 67.0 | 68.0 | 68.5 |
| -99.7 | 112.0 | 113.0 | 90.0 | 76.5 | 62.5 | 63.0 | 63.5 | 65.0 | 65.5 | 66.5 | 67.0 | 68.0 | 68.5 |
| -106.9 | 112.0 | 113.0 | 88.0 | 60.5 | 62.5 | 63.0 | 63.5 | 65.0 | 65.5 | 66.5 | 67.0 | 68.0 | 68.5 |
| -117.4 | 112.0 | 116.5 | 60.0 | 60.5 | 62.5 | 63.0 | 63.5 | 65.0 | 65.5 | 66.5 | 67.0 | 68.0 | 68.5 |
| -150.6 | 59.0 | 59.0 | 60.0 | 60.5 | 62.5 | 63.0 | 63.5 | 65.0 | 65.5 | 66.5 | 67.0 | 68.0 | 68.5 |

Dimension *l* : 14.1 mm

Measurement around the head : 640 mm

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